



# USER GUIDE

**HEAT 2**  
**45 55 45P 55P**

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Keston. For the very latest copy of literature for specification and maintenance practices visit our website [www.keston.co.uk](http://www.keston.co.uk) where you can download the relevant information in PDF format.

October 2020  
UIN 220384 A06



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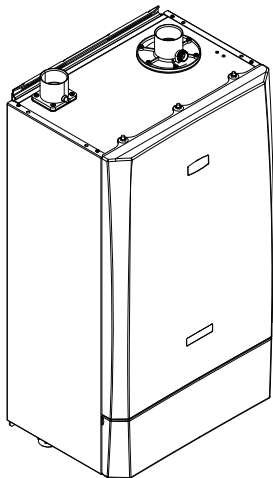
# KESTON HEAT2

45, 55

45, 55P

Natural Gas & Propane

Destination Countries: GB, IE, RO



## 1. INTRODUCTION

The **KESTON HEAT2** is a wall mounted, room sealed, super efficient condensing boiler featuring full sequence automatic spark ignition and fan assisted combustion.

Due to the very high efficiency, condensate is produced from the flue gases and this is drained to a suitable disposal point through the plastic waste pipe at the bottom of the boiler. A condensate 'plume' will also often be visible at the flue terminal.

## SAFETY

### **Current Gas Safety (Installation & Use) Regulations or rules in force.**

In your own interest, and that of safety, it is the law that this boiler must be installed and maintained by a suitably qualified Gas Safe registered engineer or in IE a competent person, in accordance with the above regulations.

The appliance should be serviced at least once a year by a suitably qualified Gas Safe registered engineer or in IE a competent person.

It is essential that the instructions in this booklet are strictly followed, for safe and economical operation of the boiler.

## ELECTRICITY SUPPLY

The appliance must be earthed.

Supply 230 V - 50 Hz, 4 Amp fuse.

This appliance is intended to be connected to the supply via a double-pole switch, having a 3mm contact separation in both poles, serving only the boiler and system controls.

## IMPORTANT NOTES

- This appliance must not be operated without the casing correctly fitted and forming an adequate seal.
- If the boiler is installed in a compartment then the compartment **MUST NOT** be used for storage purposes.
- Do not store objects around or on the boiler, and keep access clear at all times.
- Do not obstruct ventilation ducts, condensate pipework, grilles or openings in the boiler room, room space or compartment that the appliance is installed in, or the passage of combustion and ventilation to the boiler.
- Do not turn off the boiler if it is to be left unattended in frosty weather.
- If it is known or suspected that a fault exists on the boiler then it **MUST NOT BE USED** until the fault has been corrected by a suitably qualified Gas Safe registered engineer or in IE a competent person.
- Flammable materials must not be placed in close proximity to the appliance. Materials giving off flammable vapours must not be stored in the same room as the appliance.
- **This appliance can be used by children 8 years and above. Also persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, provided they have been given supervision or instruction concerning use of the**

appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- Children should be supervised to ensure that they do not play with the appliance.

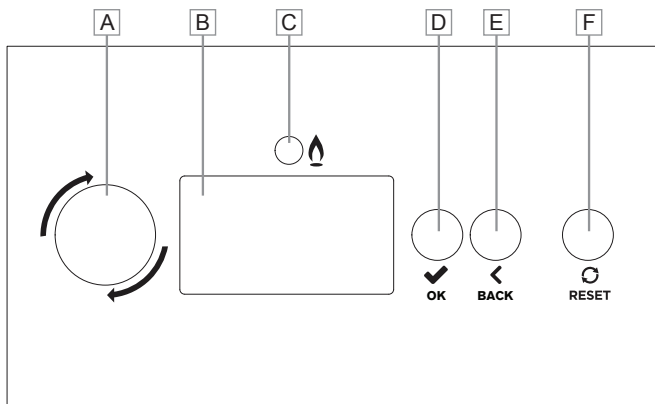
In cases of repeated or continuous shutdown a suitably qualified Gas Safe registered engineer or in IE a competent person should be called to investigate and rectify the condition causing this and carry out an operational test after each intervention on the device. Only the manufacturers original parts should be used for replacement.

## MINIMUM CLEARANCES

Clearances of **450mm** above, **300mm** below, **25mm** at the sides and **450mm** at the front of the boiler casing must be allowed for servicing.

## 2. BOILER OPERATION

### CONTROL DIAGRAM



#### A. ROTARY KNOB

- Enter a menu, if in the normal operation screen, and highlight the first menu item.
- Scroll up (anti-clockwise) or down (clockwise) in a menu
- Change the value in parameter setting.
- If an error is showing in the title bar, scroll to the associated error screen(s), and return.

#### B. LCD DISPLAY SCREEN

- Menu and status display.

#### C. BURNER LED

- Will be on if the burner is lit.

#### D. SELECT BUTTON

- Enter a menu, if in the normal operation screen, and highlight the first menu item.

- Enter the highlighted menu (sub menu or parameter), if in a menu or sub menu.
- If in a parameter setting, select a parameter which will then flash for adjustment, once adjusted using the rotary knob press again to store and move on.

#### E. BACK BUTTON

- In a menu, return to the previous menu layer.
- In parameter setting, exit the parameter without storing the value.
- In a guided assistant, go back to the previous screen.

#### F. RESET BUTTON

- Reset the associated boiler module error, if a resettable (lockout) error is active.
- Return to the normal operation screen.

## TO LIGHT THE BOILER

**A. Stand alone boiler, or a master boiler in a cascade, or a master boiler with an extension module:**

Set the operating mode in the plant menu operating mode to: Automatic

Ensure that there is a demand present on the boiler from the external controls, depending upon the configuration.

If there are no local heating or DHW circuits, set the plant / operating mode to: Day

If there are local heating circuits, set one of them - heating circuits / HC1 Boiler 1.1 or HC2 Boiler 1.2 / Operating mode to: Day

If there is a local DHW circuit set the DHW / Operating mode / DHW1 Boiler 1 to: Day

If there is an extension module configured with Heating circuits or DHW circuits set the Operating mode to: Day

e.g. Heating circuits / Operating mode / HCx EMy.z

DHW / Operating mode / DHWx EMy.z

Key: x is the Heating or DHW circuit number, y is the Extension Module designation and z its local Heating or DHW circuit designation.

**B. Slave Boiler in a Cascade:**

Refer to the Installation manual.

The boiler will commence the ignition sequence, supplying heat to the system. Ensure that the controls are then set to the operating mode required.

Note. Not all menus and options will be available depending upon the access level selected.

## OPERATING STATUS

The status screens are dependent upon the boiler configuration, they are shown below:

### KESTON HEAT 2 55kW

Operation: Htg. with temp.  
Flow Set point: 40.2°C  
Flow temp: 40.2°C

Master non cascade

### KESTON HEAT 2 55kW

Operation: Htg. with capacity  
Capacity Set point: 40%  
Capacity: 0%  
Flow temp: 40.2°C

Master non cascade / cascade Slave

### KESTON HEAT 2 55kW

Operation: Htg. with temp.  
Voltage: 5.6V  
Flow Set point: 40.2°C  
Flow temp: 40.2°C

### KESTON HEAT 2 55kW

Operation: Htg. with capacity  
Voltage: 5.6V  
Capacity Set point: 40%  
Capacity: 0%

Master non cascade,  
0-10V control

The heating circuits and DHW circuits also have status screens associated with them. e.g.

### KESTON HEAT 2 55kW

Status: OpenTherm  
Operation: Day  
Room set point: 20.0°C  
Flow set point: 60.0°C

Menu item: Heating circuit / Status / Summary /  
HC1 Boiler 1.1

### KESTON HEAT 2 55kW

Status:  
Operation: Night  
Tank temperature: 45.0°C  
Flow set point: 30.0°C

Menu item: DHW / Status / Summary / HC1  
Boiler 1.1

## SETTINGS

### 1. Heating Circuits

Menu
Plant
<b>Heating circuits</b>
DHW

Each heating circuit that is configured has the following settings:

a. Operating mode selection:

Every heating circuit can be individually set to one of the following modes;  
Standby / Time clock single day / Time clock multiple day / Day / Night.....e.g.:

Heating circuits
Status
<b>Operating mode</b>
Room temperature
Flow temperature



Heating circuits
HC1 Boiler 1.1
HC2 Boiler 1.2



HC1 Boiler 1.1
Operating mode
<b>Standby</b>

b. Room temperature

A temperature can be set for each heating circuit for the following periods:  
Day / Night / Holiday.....e.g.:

Heating circuits
Operating mode
<b>Room temperature</b>
Flow temperature
Settings



Room temperature
<b>HC1 Boiler 1.1</b>
HC2 Boiler 1.2



HC1 Boiler 1.1
<b>Room temperature. day</b>
Room temperature. night
Room temperature. holiday



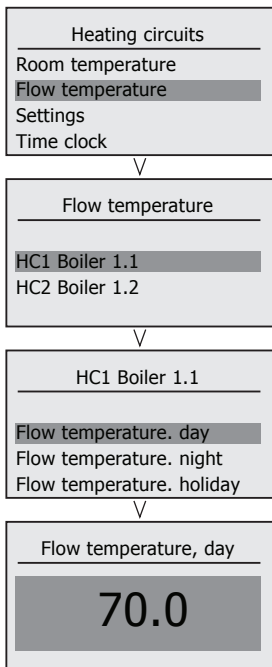
Room temperature, day
<b>20.0</b>



c. Flow temperature

A maximum flow temperature can be set for each heating circuit for the following periods

Day / Night / Holiday.....e.g.:

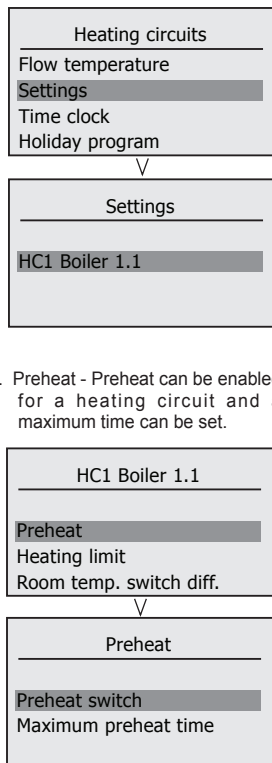


d. Settings

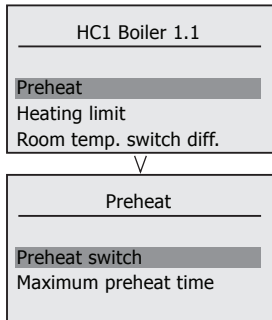
Each heating circuit has a number of settings that can be configured.

Most settings are only accessible at Installer access levels.

Day / Night / Holiday.....e.g.:

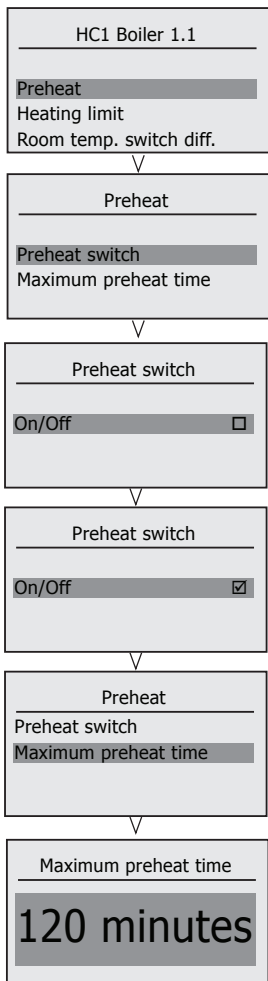


i. Preheat - Preheat can be enabled for a heating circuit and a maximum time can be set.

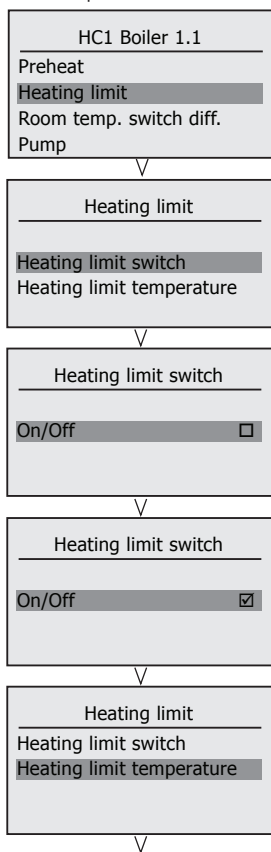


CONTINUED OVERLEAF

- i. Preheat - Preheat can be enabled for a heating circuit and a maximum time can be set.



- ii. Heating Limit- Heating limit can be enabled for a heating circuit with a limit temperature set.



<u>Heating limit temperature</u>	
On/Off	<input type="checkbox"/>



<u>Heating limit temperature</u>	
On/Off	<input checked="" type="checkbox"/>

- iii. Room Temperature Switching Differential - When a room sensor is configured for a heating circuit, the switching differential may be set.

<u>HC1 Boiler 1.1</u>	
Heating limit	
Room temp. switch diff.	
Pump	
Frost protection	



<u>Room temp. switch diff.</u>	
1°C	

- iv. Pump - The heating circuit pump overrun time can be set here. If the heating circuit pump is controlled by 0-10V then additional speed parameters can be set..

<u>HC1 Boiler 1.1</u>	
Room temp. switch diff.	
Pump	
Frost protection	



<u>Pump</u>	
Overrun time	
Overrun speed	
Maximum speed	



<u>Overrun time</u>	
10 secs	



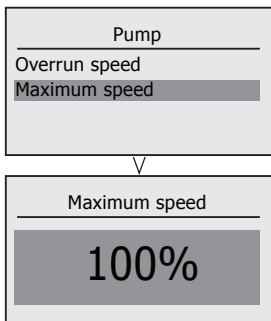
<u>Pump</u>	
Overrun time	
Overrun speed	
Maximum speed	



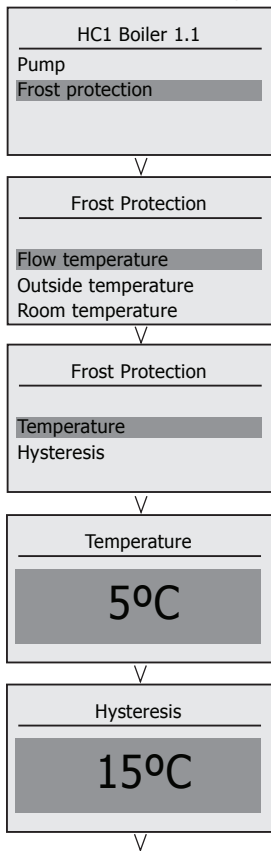
<u>Overrun speed</u>	
70%	

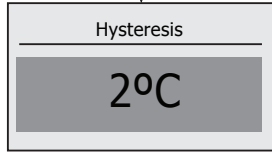
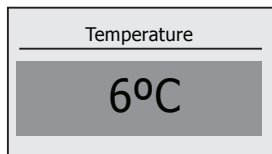
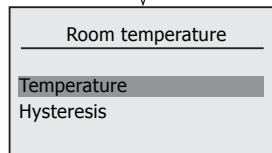
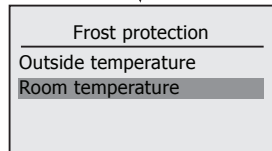
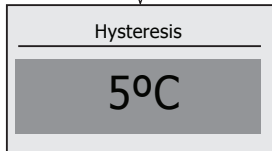
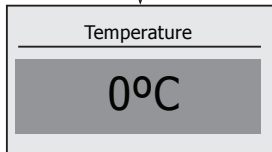
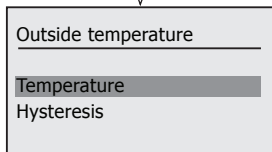
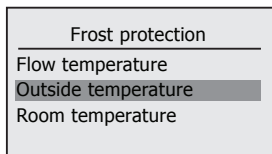


CONTINUED OVERLEAF



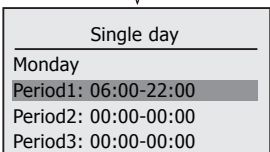
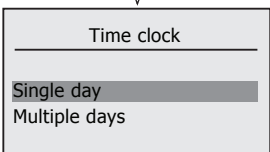
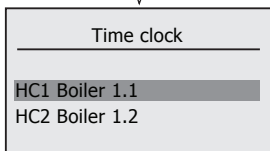
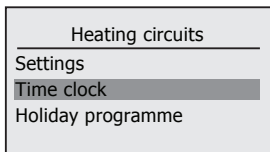
- v. Frost Protection - The heating circuit frost protection can be set to be triggered on a number of temperature sources if configured.





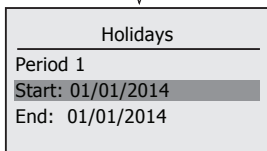
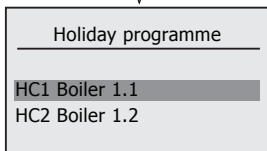
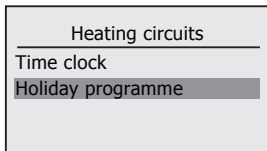
e. Time clock

Each heating circuit can be programmed to a specific time clock with three periods per day, single days individually Monday through to Sunday, or multiple days Monday to Friday or Saturday and Sunday  
Single / Multiple.....e.g.:

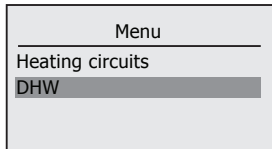


f. Holiday programme

Each heating circuit can have up to 8 holiday periods which are programmed between start and end dates.....e.g.:

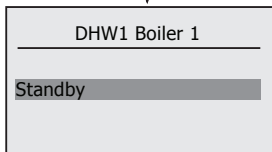
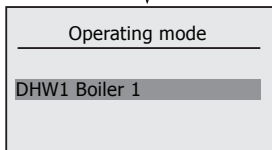
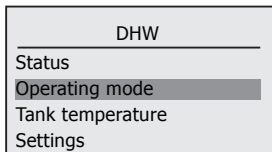


## 2. DHW Circuits

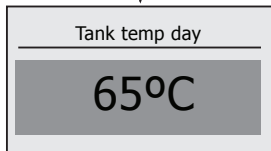
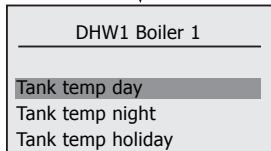
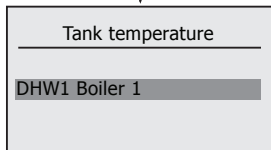
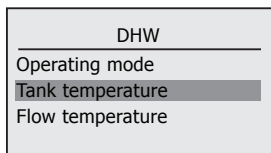


The DHW circuit when configured has the following settings:

- a. Operating mode selection:  
The DHW circuit can be set to any of the following:



- b. Tank temperature  
A temperature can be set for each DHW circuit for the following periods:  
Day / Night / Holiday.....e.g.:



d. Settings

Each DHW circuit has a number of settings that can be configured. Most settings are only accessible at Installer access levels. Day / Night / Holiday.....e.g.:

DHW

---

Tank temperature

Settings

Time clock

Holiday program

Settings

---

DHW1 Boiler 1

- i. One time boost - One time boost can be enabled and hot water tank will be charged to set a temperature at any required time.

DHW1 Boiler 1

---

One time boost

Primary pump

Legionalla

One time boost

---

On/Off

Temperature

On/Off

---

One time boost

On/Off

---

One time boost

One time boost

---

On/Off

Temperature

Temperature

---

60°C



- ii. Primary pump - This is where the pump control parameters for the Hot Water Tank primary charge pump may be set..

DHW1 Boiler 1
One time boost
Primary pump
Legionella
Frost Protection

Primary pump
Overrun time
Overrun speed
Minimum speed

Overrun time
10secs

Primary pump
Overrun time
Overrun speed
Minimum speed
Maximum speed

Overrun speed
50%

Primary pump
Overrun speed
Minimum speed
Maximum speed

Minimum speed
10%

Primary pump
Minimum speed
Maximum speed

Maximum speed
100%

- iii. Legionella - The legionella functionality can be set to either a fixed weekday or a time interval. The temperature can also be set.

DHW1 Boiler 1	
Primary pump	
Legionella	
Frost protection	



None /Weekday /Interval

LegionellaPrimary pump	
Operation mode	
Temperature	
Interval	



Legionella	
Operation mode	
Temperature	
Interval	



Temperature	
65°C	



Legionella	
Temperature	
Interval	



Interval	
7day(s)	

- iv. Frost Protection - The minimum flow temperature for a frost protection demand can be set.

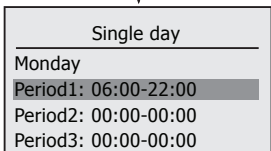
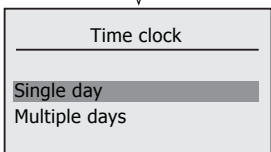
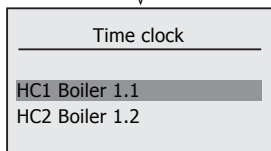
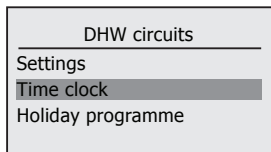
Frost protection	
DHW minimum flow	



DHW minimum flow	
8°C	

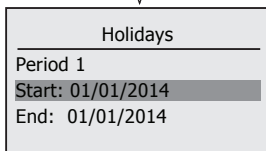
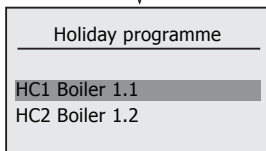
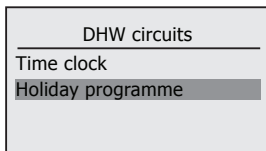
d. Time clock

Each DHW circuit can be programmed to a specific time clock with three periods per day, single days individually Monday through to Sunday, or multiple days Monday to Friday or Saturday and Sunday Single / Multiple.....e.g.:

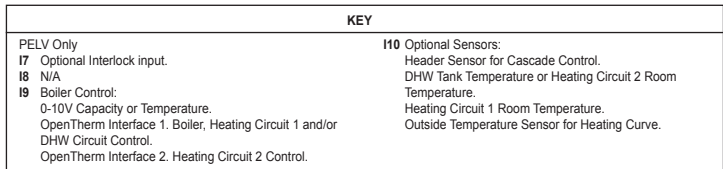
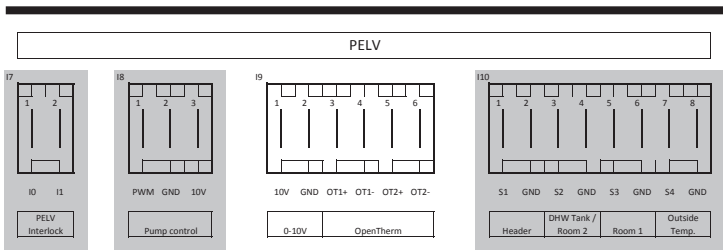
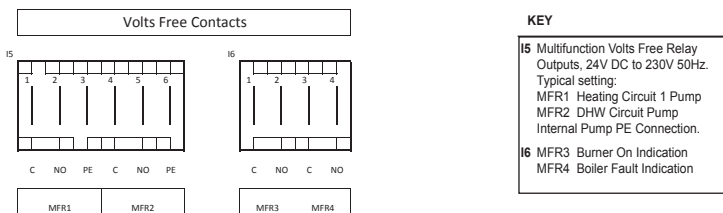
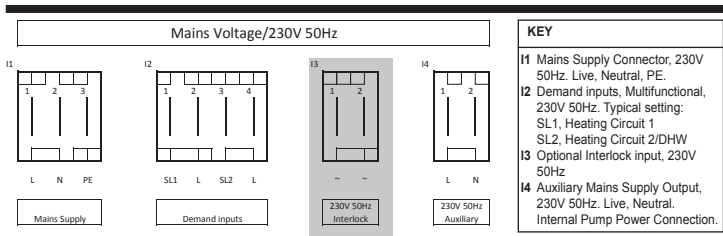


e. Holiday programme

Each DHW circuit can have up to 8 holiday periods which are programmed between start and end dates.....e.g.:



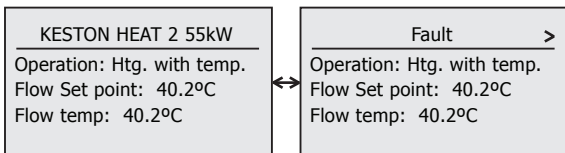
### 3. INSTALLER CONNECTIONS



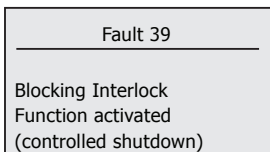
\*Note: The items grayed out are not standard and are connections provided by the relevant option kits.

#### 4. FAULTS

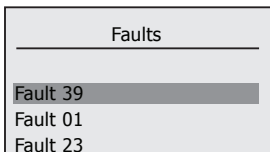
When a fault occurs the title bar of the status display will alternate between:



Using the scroll knob the detail of the fault can be displayed. e.g.:



The fault once rectified can now be reset by pressing the reset button whilst in this display. If there are multiple faults then a list of faults will be shown. e.g.:



Each fault may be highlighted and selected to show the detail as above

## BOILER FAULTS

ERROR TYPE (Warning, Blocking, Lockout)	DESCRIPTION	ERROR CODE (OpenTherm)
	<b>HARDWARE (THERMISTORS, ACTUATORS)</b>	
B	Flow thermistor open circuit (blocking)	1
B	Flow thermistor short circuit (blocking)	2
B	Return thermistor open circuit (blocking)	3
B / W	Return thermistor short circuit (blocking)	4
B / W	Flue thermistor open circuit (blocking)	5
B	Flue thermistor short circuit (blocking)	6
W	DHW thermistor open circuit	7
W	DHW thermistor short circuit	8
W	Outside thermistor defect (open / short)	9
B	Water pressure sensor defect	10
L	Flow thermistor open circuit (lockout after 24h)	11
L	Flow thermistor short circuit (lockout after 24h)	12
L	Return thermistor open circuit (lockout after 24h)	13
L	Return thermistor short circuit (lockout after 24h)	14
L	Flue thermistor open circuit (lockout after 24h)	15
L	Flue thermistor short circuit (lockout after 24h)	16
L	Heat thermistor open circuit (lockout after 24h)	17
L	Heat thermistor short circuit (lockout after 24h)	18
B	Heat thermistor open circuit (blocking)	19
B	Heat thermistor short circuit (blocking)	20
W	Header thermistor open circuit	21
W	Header thermistor short circuit	22
W	Room (hc1) thermistor open circuit	23
W	Room (hc1) thermistor short circuit	24

<b>ERROR TYPE</b> (Warning, Blocking, Lockout)	<b>DESCRIPTION</b>	<b>ERROR CODE</b> (OpenTherm)
	<b>TEMPERATURE SUPERVISIONS</b>	
B	Blocking due to flow overheat	30
B	Blocking due to return overheat	31
B	Blocking due to flue overheat	32
B	Flow & return reversed	33
B	Thermistor pipe fit supervision active (blocking)	34
L	Thermistor pipe fit supervision (lockout)	35
B	Flow gradient supervision	36
B	Flue gradient supervision (reserved)	37
B	Blocking delta temp flow/return	38
L	Lockout flow overheat	39
L	Lockout return overheat	40
L	Lockout flue overheat (flue thermistor) Lockout thermal fuse (thermal fuse)	41
B	Blocking due to heat exchanger overheat	42

<b>ERROR TYPE</b> (Warning, Blocking, Lockout)	<b>DESCRIPTION</b>	<b>ERROR CODE</b> (OpenTherm)
	<b>SYSTEM (FLAME, FAN, HYDRAULIC, ETC.)</b>	
B	Blocking due to no CH water flow	50
B	Low water pressure	51
W	No flame signal at start (restart)	52
W	Flameloss during operation => endless restarts (Parameter "endless restarts" activated)	53
L	Flameloss during operation, => Lockout after restarts attempts are used (Parameter "endless restarts" deactivated)	54
W	Flameloss during stabilisation => restart attempts	55
L	Flameloss during stabilisation => Lockout after restarts attempt are used	56
L	False flame (with heat demand)	57
L	No flame after restarts	58
B/L	Fan speed, stand still check	59
L	Fan speed not achieved, e.g. Pre-purge-test, post-purge-test etc.	60
B/L	Error fan speed during pre-purge (5* restarts => lockout )	61
W	Error min/max supervision fan speed during operation (restart)	62
W	Warning due to mains overvoltage	63
B	Blocking due to mains undervoltage	64
W	OpenTherm plus error (communication faulty; no connection anymore , etc)	65
L	Too many remote resets	66
B	No water flow indication	67
B	PWM pump blocking error (feedback 90%)	68
B	PWM pump electrical error (feedback 85%)	69
B	HX water flow fault (feedback < min flow rate)	70
B	PWM pump dry run error (feedback 80%)	71
B	Warning code from pump (feedback 75%)	72



<b>ERROR TYPE</b> (Warning, Blocking, Lockout)	<b>DESCRIPTION</b>	<b>ERROR CODE</b> (OpenTherm)
	<b>SYSTEM (FLAME, FAN, HYDRAULIC, ETC.) - CONT</b>	
W	VariCAN Error	73
B	Safety Interlock Function activated (controlled shutdown)	74
L	Air Pressure Switch error	75
W	Air Pressure Switch warning (restart)	76
B	High water pressure	77
B/L	Min water flow rate	78
W	Maximum water flow rate exceeded	79
W	Quartz crystal error	80
B	0-10V Input out of range	81
	<b>INTERNAL SYSTEM</b>	
L	Retails supervision error (COM-, Valve-Retails)	93
L	Request for re-update	94
B	Blocking due to programming mode	95
L	Lockout parameter mismatch	96
L	Lockout parameter set	97
B/L	Internal blocking error	98
L	System lockout (internal lockout error)	99

## 5. GENERAL INFORMATION

### TO SHUT DOWN THE BOILER

Note. The inbuilt frost protection for the boiler will not function if there is no mains supply to the boiler.

#### 1. For short periods

Set the external controls to OFF. Wait 4 minutes and then isolate the mains supply to the boiler.

#### 2. For longer periods

Set the external controls to OFF. Switch the electricity supply to OFF. For longer periods the entire system should be drained, including the domestic hot water supply.

### TO RELIGHT THE BOILER

Refill the system if it has been drained, taking care to ensure no air is in the boiler or system.

Repeat the procedure detailed in 'To light the boiler'.

### FROST PROTECTION

The KESTON HEAT2 boiler has built into its control system the facility to protect the boiler only against freezing.

**Note.** This may not protect remote parts of the system, in which case a separate frost thermostat should be fitted.

### BOILER OVERHEAT THERMOSTAT

Boiler overheating is detected by electrical sensors connected to the boiler control module. If the boiler overheats it will shut down and the display will show Overheat Lockout. Press the reset button and the boiler will relight. If the fault recurs turn off the boiler and consult a suitably qualified Gas Safe registered engineer or in IE a competent person.

### CONDENSATE DRAIN

This appliance is fitted with a siphonic condensate trap system that reduces the risk of the appliance condensate from freezing. However should the condensate pipe to this appliance freeze, please follow these instructions:

a. If you do not feel competent to carry out the defrosting instructions below please call your local Gas Safe Registered installer for assistance.

b. If you do feel competent to carry out the following instructions please do so with care when handling hot utensils. Do not attempt to thaw pipework above ground level.

If this appliance develops a blockage in its condensate pipe, its condensate will build up to a point where it will make a gurgling noise prior to locking out displaying "Ignition Lockout" on the display. If the appliance is reset it will make a gurgling noise prior to it locking out displaying "Ignition Lockout" on the display.

To unblock a frozen condensate pipe;

1. Follow the routing of the plastic pipe from its exit point on the appliance, through its route to its termination point.

Locate the frozen blockage. It is likely that the pipe is frozen at the most exposed point external to the building or where there is some obstruction to flow. This could be at the open end of the pipe, at a bend or elbow, or where there is a dip in the pipe in which condensate can collect. The location of the blockage should be identified as closely as possible before taking further action.

2. Apply a hot water bottle, microwaveable heat pack or a warm damp cloth to the frozen blockage area. Several applications may have to be made before it fully defrosts. Warm water can also be poured onto the pipe from a watering can or similar. DO NOT use boiling water.

3. Caution when using warm water as this may freeze and cause other localised hazards.

4. Once the blockage is removed and the condensate can flow freely, reset the appliance. (Refer to "To Light the boiler")
5. If the appliance fails to ignite, call your Gas Safe Registered engineer.

**Preventative solutions:**

During cold weather, set the boiler stat to maximum. (Must return to original setting once cold spell is over).

Place the heating on continuous and turn the room stat down to 15°C overnight or when unoccupied. (Return to normal after cold spell).

**ESCAPE OF GAS**

Should a gas leak or fault be suspected contact your local gas supplier without delay.

Do NOT search for gas leaks with a naked flame.

**CLEANING**

For normal cleaning simply dust with a dry cloth.

To remove stubborn marks and stains use a damp cloth and mild detergent.

DO NOT use abrasive cleaning materials.

### SYSTEM SET UP INFORMATION

INSTALLER TO RECORD THE FOLLOWING INFORMATION

Primary / Secondary:	
Boiler Number:	
Hydraulic Circuit No:	
Plant Configuration:	
Local Heating Circuit Configuration:	
Local DHW Circuit Configuration:	



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Manufactured under  
an ISO 9001  
registered quality  
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#### Technical Training

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